

**APPENDIX K**

**HAZARD QUOTIENTS FOR BACKGROUND CONCENTRATIONS**

Table K-1. Hazard Quotients for Background Concentrations

Species	COPEC	Background C <sub>soil</sub> mg/kg	BW kg	IR <sub>soil</sub> kg/day	C <sub>plant</sub> mg/kg	C <sub>worm</sub> mg/kg	C <sub>mammal</sub> mg/kg	P plant %	P worm %	P mammal %	IR kg/day	SUF	Dose mg/kg- day	TRV <sub>low</sub> <sup>(c)</sup>	TRV <sub>high</sub> <sup>(c)</sup>	HQ <sub>low</sub>	HQ <sub>high</sub>
Vole	Antimony	0.37	0.026	0.0003	0.016	0.37	0.001	1	0	0	0.012	1	0.012	0.059	0.59	0.20	0.02
	Cadmium	0.64	0.026	0.0003	0.487	5.8	0.23	1	0	0	0.012	1	0.232	0.060	2.64	3.87	0.09
	Chromium	107	0.026	0.0003	4.39	32.7	7.16	1	0	0	0.012	1	3.261	3.280	13.14	0.99	0.25
	Copper	48.8	0.026	0.0003	9.02	25.1	13.5	1	0	0	0.012	1	4.726	2.67	632	1.77	0.01
	Lead	30.7	0.026	0.0003	1.81	12.7	4.9	1	0	0	0.012	1	1.190	1.0	240.64	1.19	0.00
	Mercury	0.42	0.026	0.0003	0.274	0.71	0.023	1	0	0	0.012	1	0.131	0.027	0.27	4.86	0.49
	Selenium	0.24	0.026	0.0003	0.105	0.33	0.386	1	0	0	0.012	1	0.051	0.05	1.21	1.03	0.04
	Silver	0.21	0.026	0.0003	0.003	0.43	0.001	1	0	0	0.012	1	0.004	22	220	0.0002	0.00002
	Thallium	1.5	0.026	0.0003	0	0.395	0.153	1	0	0	0.012	1	0.017	0.48	1.43	0.04	0.01
	Zinc	92	0.026	0.0003	59.1	377	108	1	0	0	0.012	1	28.338	9.6	411	2.95	0.07
Robin <sup>(a)</sup> (50% Worms + 50% Plants)	Antimony	0.37	0.083	0.0004	0.016	0.37	0.001	0.5	0.5	0	0.004	1	0.011	NA	NA	NA	NA
	Cadmium	0.64	0.083	0.0004	0.487	5.8	0.23	0.5	0.5	0	0.004	1	0.155	0.08	10.4	1.93	0.01
	Chromium	107	0.083	0.0004	4.39	32.7	7.16	0.5	0.5	0	0.004	1	1.409	1	5	1.41	0.28
	Copper	48.8	0.083	0.0004	9.02	25.1	13.5	0.5	0.5	0	0.004	1	1.057	2.3	52.3	0.46	0.02
	Lead (Eco-SSL)	30.7	0.083	0.0004	1.81	12.7	4.9	0.5	0.5	0	0.004	1	0.498	1.6	8.75	0.31	0.06
	Lead (BTAG)	30.7	0.083	0.0004	1.81	12.7	4.9	0.5	0.5	0	0.004	1	0.498	0.014	8.75	35.54	0.06
	Mercury	0.42	0.083	0.0004	0.274	0.71	0.023	0.5	0.5	0	0.004	1	0.026	0.039	0.18	0.66	0.14
	Selenium	0.24	0.083	0.0004	0.105	0.33	0.386	0.5	0.5	0	0.004	1	0.012	0.23	0.93	0.05	0.01
	Silver	0.21	0.083	0.0004	0.003	0.43	0.001	0.5	0.5	0	0.004	1	0.011	NA	NA	NA	NA
	Thallium	1.5	0.083	0.0004	0	0.395	0.153	0.5	0.5	0	0.004	1	0.017	NA	NA	NA	NA
Zinc	92	0.083	0.0004	59.1	377	108	0.5	0.5	0	0.004	1	10.952	17.2	172	0.64	0.06	
Robin <sup>(b)</sup> (100% Worms)	Antimony	0.37	0.083	0.0004	0.016	0.37	0.001	0	1	0	0.004	1	0.020	NA	NA	NA	NA
	Cadmium	0.64	0.083	0.0004	0.487	5.8	0.23	0	1	0	0.004	1	0.283	0.08	10.4	3.53	0.03
	Chromium	107	0.083	0.0004	4.39	32.7	7.16	0	1	0	0.004	1	2.092	1	5	2.09	0.42
	Copper	48.8	0.083	0.0004	9.02	25.1	13.5	0	1	0	0.004	1	1.445	2.3	52.3	0.63	0.03
	Lead (Eco-SSL)	30.7	0.083	0.0004	1.81	12.7	4.9	0	1	0	0.004	1	0.760	1.6	8.75	0.48	0.09
	Lead (BTAG)	30.7	0.083	0.0004	1.81	12.7	4.9	0	1	0	0.004	1	0.760	0.014	8.75	54.29	0.09
	Mercury	0.42	0.083	0.0004	0.274	0.71	0.023	0	1	0	0.004	1	0.036	0.039	0.18	0.93	0.20
	Selenium	0.24	0.083	0.0004	0.105	0.33	0.386	0	1	0	0.004	1	0.017	0.23	0.93	0.07	0.02
	Silver	0.21	0.083	0.0004	0.003	0.43	0.001	0	1	0	0.004	1	0.022	NA	NA	NA	NA
	Thallium	1.5	0.083	0.0004	0	0.395	0.153	0	1	0	0.004	1	0.026	NA	NA	NA	NA
Zinc	92	0.083	0.0004	59.1	377	108	0	1	0	0.004	1	18.612	17.2	172	1.08	0.11	

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**Table K-1. Hazard Quotients for Background Concentrations (Continued)**

Species	COPEC	Background C <sub>soil</sub> mg/kg	BW kg	IR <sub>soil</sub> kg/day	C <sub>plant</sub> mg/kg	C <sub>worm</sub> mg/kg	C <sub>mammal</sub> mg/kg	P plant %	P worm %	P mammal %	IR kg/day	SUF	Dose mg/kg- day	TRV <sub>low</sub> <sup>(e)</sup>	TRV <sub>high</sub> <sup>(e)</sup>	HQ <sub>low</sub>	HQ <sub>high</sub>
<b>Raccoon</b>	Antimony	0.37	5.7	0.03	0.016	0.37	0.001	0.5	0.5	0	0.3	1	0.012	0.059	0.59	0.21	0.02
	Cadmium	0.64	5.7	0.03	0.487	5.8	0.23	0.5	0.5	0	0.3	1	0.169	0.060	2.64	2.81	0.06
	Chromium	107	5.7	0.03	4.39	32.7	7.16	0.5	0.5	0	0.3	1	1.539	3.280	13.14	0.47	0.12
	Copper	48.8	5.7	0.03	9.02	25.1	13.5	0.5	0.5	0	0.3	1	1.155	2.67	632	0.43	0.002
	Lead	30.7	5.7	0.03	1.81	12.7	4.9	0.5	0.5	0	0.3	1	0.543	1.0	240.64	0.54	0.002
	Mercury	0.42	5.7	0.03	0.274	0.71	0.023	0.5	0.5	0	0.3	1	0.028	0.027	0.27	1.04	0.10
	Selenium	0.24	5.7	0.03	0.105	0.33	0.386	0.5	0.5	0	0.3	1	0.013	0.05	1.21	0.25	0.01
	Silver	0.21	5.7	0.03	0.003	0.43	0.001	0.5	0.5	0	0.3	1	0.013	22	220	0.001	0.00
	Thallium	1.5	5.7	0.03	0	0.395	0.153	0.5	0.5	0	0.3	1	0.018	0.48	1.43	0.04	0.01
	Zinc	92	5.7	0.03	59.1	377	108	0.5	0.5	0	0.3	1	11.961	9.6	411	1.25	0.03
<b>Owl</b>	Antimony	0.37	0.16	0.0004	0.016	0.37	0.001	0.5	0.2	0.3	0.02	1	0.011	NA	NA	NA	NA
	Cadmium	0.64	0.16	0.0004	0.487	5.8	0.23	0.5	0.2	0.3	0.02	1	0.186	0.08	10.4	2.32	0.02
	Chromium	107	0.16	0.0004	4.39	32.7	7.16	0.5	0.2	0.3	0.02	1	1.628	1	5	1.63	0.33
	Copper	48.8	0.16	0.0004	9.02	25.1	13.5	0.5	0.2	0.3	0.02	1	1.820	2.3	52.3	0.79	0.03
	Lead (Eco-SSL)	30.7	0.16	0.0004	1.81	12.7	4.9	0.5	0.2	0.3	0.02	1	0.691	1.6	8.75	0.43	0.08
	Lead (BTAG)	30.7	0.16	0.0004	1.81	12.7	4.9	0.5	0.2	0.3	0.02	1	0.691	0.014	8.75	49.37	0.08
	Mercury	0.42	0.16	0.0004	0.274	0.71	0.023	0.5	0.2	0.3	0.02	1	0.037	0.039	0.18	0.94	0.20
	Selenium	0.24	0.16	0.0004	0.105	0.33	0.386	0.5	0.2	0.3	0.02	1	0.030	0.23	0.93	0.13	0.03
	Silver	0.21	0.16	0.0004	0.003	0.43	0.001	0.5	0.2	0.3	0.02	1	0.012	NA	NA	NA	NA
	Thallium	1.5	0.16	0.0004	0	0.3945	0.153	0.5	0.2	0.3	0.02	1	0.019	NA	NA	NA	NA
Zinc	92	0.16	0.0004	59.1	377	108	0.5	0.2	0.3	0.02	1	17.399	17.2	172	1.01	0.10	
<b>Harrier</b>	Antimony	0.37	0.35	0.0006	0.016	0.37	0.001	0	0	1	0.03	1	0.001	NA	NA	NA	NA
	Cadmium	0.64	0.35	0.0006	0.487	5.8	0.23	0	0	1	0.03	1	0.021	0.08	10.4	0.26	0.002
	Chromium	107	0.35	0.0006	4.39	32.7	7.16	0	0	1	0.03	1	0.797	1	5	0.80	0.16
	Copper	48.8	0.35	0.0006	9.02	25.1	13.5	0	0	1	0.03	1	1.241	2.3	52.3	0.54	0.02
	Lead (Eco-SSL)	30.7	0.35	0.0006	1.81	12.7	4.9	0	0	1	0.03	1	0.473	1.6	8.75	0.30	0.05
	Lead (BTAG)	30.7	0.35	0.0006	1.81	12.7	4.9	0	0	1	0.03	1	0.473	0.014	8.75	33.76	0.05
	Mercury	0.42	0.35	0.0006	0.274	0.71	0.023	0	0	1	0.03	1	0.003	0.039	0.18	0.07	0.0003
	Selenium	0.24	0.35	0.0006	0.105	0.33	0.386	0	0	1	0.03	1	0.033	0.23	0.93	0.15	0.004
	Silver	0.21	0.35	0.0006	0.003	0.43	0.001	0	0	1	0.03	1	0.0004	NA	NA	NA	NA
	Thallium	1.5	0.35	0.0006	0	0.395	0.153	0	0	1	0.03	1	0.016	NA	NA	NA	NA
Zinc	92	0.35	0.0006	59.1	377	108	0	0	1	0.03	1	9.415	17.2	172	0.55	0.05	

Shading indicates HQ>1.0.

Note: For birds, two sets of low TRVs were modeled for lead: the Navy/BTAG TRV exceeded an HQ<sub>low</sub> of 1; the Eco-SSL TRV did not exceed an HQ of 1.

NA – not available

(a) Assumes an omnivorous diet for the robin.

(b) Assumes only an invertivorous diet for the robin.

**Table K-1. Hazard Quotients for Background Concentrations (Continued)**

- (c) For mammal receptors: TRVs for cadmium, copper, lead, mercury, selenium, thallium, and zinc were obtained from U.S. EPA Region 9 Navy/BTAG; TRVs for antimony were obtained from U.S. EPA, 2005; TRVs for chromium were from Sample et al., 1996; TRVs for silver came from ATSDR, 1990. For avian receptors: cadmium, copper, lead, mercury, selenium, and zinc were obtained from U.S. EPA Region 9 Navy/BTAG; TRVs for chromium were obtained from Sample et. al., 1996; and the other TRVs for lead were from U.S. EPA, 2005.